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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,177	07/17/2006	Holger Timinger	DE040018US1	2751

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS
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EXAMINER	
BRUTUS, JOEL F	
ART UNIT	PAPER NUMBER
3777	

NOTIFICATION DATE	DELIVERY MODE
03/28/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/586,177	TIMINGER ET AL.	
	Examiner	Art Unit	
	JOEL F. BRUTUS	3777	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-10* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-10* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/14/2011 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld (US Pat: 6,301,496) in view of Sachar (Pub. No.: US 2005/0096589) and further in view of Overall et al (Pub. No.: US 2004/0260346).

Regarding claims 1 and 10, Reisfeld discloses a catheter 20 for inserting into a human body [see column 16 lines 3-10] and distal end 22 includes a device 28 (relied on as the locating device) to determine the position and orientation of the catheter within the body [see column 16 lines 25-29]. Reisfeld discloses catheter 20 is inserted into heart 70 and tip 26 is brought into contact with a plurality of locations 75 and 77

(meaning nodes of the body of the body volume) on an inner surface 72 of heart 70 [see column 17 lines 5-10 and fig 2]. Reisfeld discloses local data points from a plurality of locations are used for producing a map of heart 70, or of a portion of the heart [see column 17 lines 5-19, fig 3].

Reisfeld discloses a plurality of phases of the cyclic motion so as to form a motion map of the volume (relied on as the model that describes the spontaneous movement) [see column 11 lines 15-18 and figs 45-E] to which interpolation nodes (location points, see figs 4, 5A-E, column 8 lines 10-25) during at least one reference phase (predetermined phase) [see column 10 lines 1-10 and column 11 lines 1-10] of the heartbeat and further disclose the phase preferably be the end-diastole [see column 17 lines 28-29 and column 6 lines 1-15] and the movement is due to the beating of the heart [see column 5 lines 58-60]. Reisfeld discloses movement vectors are calculated based on vectors from the associated grid points to their respective sampled points and the grid points are then moved according to their respective movement vectors [see column 4 lines 26-39].

Reisfeld discloses computer 36 (relied on as the data processor) having display 42 and signal processing circuit 40 within computer 36 [see column 16 lines 50-55] which receives position and orientation signals processed by signal processing circuit 40 to compute the position of the catheter [see column 16 lines 58-67].

With regards to a sensor for measuring a movement parameter; as explained above, Reisfeld discloses calculating movement parameters and forming a motion map which requires the use of a motion/movement sensor; therefore, a motion/movement

sensor is inherently disclosed (emphasis added) and Reisfeld also discloses functional portion 24 may include any other desired sensor [see column 16 lines 18-19].

Nonetheless, overall et al disclose one or more motion sensors for measuring acute change in the motion of the ventricule wall (body volume) [see 0052, 0041, 0045].

Reisfeld discloses any other suitable method may be used to compensate for movement of heart 70 [see column 17 lines 25-26]. However, Reisfeld doesn't calculate an estimated movement compensated location to the location and the vectorial displacement of the instrument.

Nonetheless, Sachar discloses a servo system that has a correction input that compensates for the dynamic position of a body part, or organ, such as the heart, thereby offsetting the response such that the actual tip moves in unison with the beating heart [see 0020] and calculating a desired (or estimated) position or movement compensated location the corresponding to the location and the vectorial displacement of the instrument (catheter) [see figs 2L, 3A-B and 0065] by calculating an error position which is the difference between the actual position and the desired position [see 0103-0104].

Therefore, one skilled in the art at the time the invention was made would have been motivated to combine Reisfeld with Sachar by calculating an estimated movement compensated location to the location and the vectorial displacement of the instrument during at least one reference phase; for the purpose of offsetting the response such that the actual tip moves substantially in unison with the beating heart [see 0020, 0077, Sachar] and with Overall et al by using a motion sensor coupled to the data processor;

in order to measure abrupt change in the motion of the apex of the heart [see 0052, Overall et al] and to synchronize the catheter tip and moving body organs [see 0016, Sachar].

Regarding claim 2, all other limitations are taught as set forth by the above teaching.

Reisfeld discloses a processor reconstructs a 3D map of a volume in a patient's body from a plurality of sampled points (interpolation nodes as explained above see figs 4, 5A-E) on the volume whose position coordinates have been determined [see column 3 lines 1-5; column 11 lines 42-52] and reconstructing a 3D map of a volume in movement [see column 2 lines 55-59]. Reisfeld discloses computer 36 includes graphic hardware for polygon manipulation, which allows performing reconstruction stages using fast computer graphic techniques [see column 16 lines 60-67].

Regarding claim 3, all other limitations are taught as set forth by the above teaching.

Reisfeld discloses interpolating movement of interpolation nodes (grid points) and to allow finer adjustment of the closed curve [see column 4 lines 40-50, column 7 lines 18-29] which means the movement of the interpolation nodes is supplemented as described in the specification paragraph 0012, where Applicant discloses, interpolating the nodes would supplements the movement of the interpolations in the model [see 0012, specification]..

Regarding claim 4, all other limitations are taught as set forth by the above teaching.

Reisfeld discloses acquiring fluoroscope images of the volume [see column 7 lines 44-47 and column 11 lines 64-67], determining a location of interpolation nodes (grid points) from the images [see column 7 lines 45-60]. Reisfeld further discloses rendering the image includes defining a color scale and displaying a color associated with the value, at each of the plurality of points [see column 13 lines 40-43].

Reisfeld doesn't explicitly disclose the fluoroscope images are three-dimensional images.

Nonetheless, Sachar discloses three dimensional imaging [see 0006, 0111] and Reisfeld disclose three-dimensional volume and three dimensional (3D) map of the volume [see column 2 lines 34-50].

Therefore, one skilled in the art at the time the invention was made would have been motivated to combine Reisfeld with Sachar by using three-dimensional images; because three-dimensional imaging provide an increase visualization.

Regarding claim 5, all other limitations are taught as set forth by the above teaching.

Reisfeld discloses tip 26 is brought into contact with a plurality of locations 75 and 77 (relied on as interpolation nodes of the body volume) on heart 70. Reisfeld discloses at each of the plurality of locations, the coordinates of tip 26 are determined

by device 28 [see column 17 lines 5-19, lines 34-54] which means the location of the interpolations nodes of the heart corresponds to the locations obtained with the locating device 28.

Regarding claim 6, all other limitations are taught as set forth by the above teaching.

Reisfeld discloses the locations are obtained without moving the instrument relative to the body volume [see column 17 lines 1-15, 34-54 and fig 1] because the locations are determined by device 28 while the instrument is at these locations (emphasis added).

Regarding claim 8, all other limitations are taught as set forth by the above teaching.

Reisfeld discloses the apparatus includes an ECG monitor 73 for gating the operation of the probe so as to determine the points at a fixed phase of a cyclic movement of the volume [see column 13 lines 13-16, column 17 lines 1-5].

Regarding claim 9, all other limitations are taught as set forth by the above teaching.

Reisfeld discloses the locating device 28 determines the location of the instrument using magnetic fields or optical method [see column 16 lines 27-42].

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld (US Pat: 6,301,496) in view of Sachar (Pub. No.: US 2005/0096589) and further in view of Overall et al (Pub. No.: US 2004/0260346) and further in view of Evans et al (Pub. No.: US 2003/0055410) and Soper et al (Pub. No.: US 2005/0182295).

Regarding claim 7, all other limitations are taught as set forth by the above teaching.

Reisfeld doesn't disclose a still image of the body volume and doesn't determine the estimated movement compensated location of the instrument in the static image during at least one phase.

Nonetheless, Evans et al disclose a video display coupled a computer to provide a stationary (or still) image at the viewer 1202 so that the operator perceives the site after data associated with the image have been tailored to compensate for motion of the site [see 0033, 0245]. Evans et al disclose by correlating the ECG data 502 with the position of the worksite (or body volume) over time, the system can be arranged to predict the position of the worksite from the ECG data and the predicted position can be used to compensate for system lag [see 0133, 0155].

In addition, Soper et al disclose a static 3-D airway surface model along with a current position of the flexible endoscope [see 0032, 0059, 0115] and adjust for an error of the actual position of the distal end of the endoscope, to account for breathing motion [see 0033, 0037] and compensate for effect of bodily function such as breathing [see 0115-0116] and further disclose multiple respiration cycle (meaning at least one phase)

[see 0117 and fig 6]. As shown in fig 5A, a predicted position 216 and an actual position 214 of the endoscope distal end [see fig 5A].

Therefore, one skilled in the art at the time the invention was made would have been motivated to combine Reisfeld with Evans et al and Soper et al by using a still (or stationary) image of the body volume and determines the estimated movement compensated location of the instrument in the static image during at least one phase; in order to synchronize the instrument with the beating heart or boy volume motion; thereby greater accuracy and higher precision.

Response to Arguments

5. Applicant's arguments with respect to claims 1-10 have been considered but are moot because the arguments do not apply to any of the references being used in the current rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL F. BRUTUS whose telephone number is (571)270-3847. The examiner can normally be reached on Mon-Thu 8:30 AM to 7:00 PM (Off Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tse Chen can be reached on (571)272-3672. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. F. B./
Examiner, Art Unit 3777